Embedded Board

BNX-I81

Always at the forefront of innovation

User Manual

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FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

Warranty

1. Warranty does not cover damages or failures that are raised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subject to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
• Use the correct AC input voltage range.

To reduce the risk of electric shock:
• Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
• Danger of explosion if battery incorrectly replaced.
• Replace only with the same or equivalent type recommend by the manufacturer.
• Dispose of used batteries according to local ordinance.

Before Using the System

Before using the system, prepare basic system components.

If the system comes as a barebone; that is, none of the key components, including processor, memory, and hard drive has been pre-installed as part of your purchase, you will need to at least ensure a compatible counterpart is located and installed.

You will also need a few external system peripherals intended for the use of the system, a common pool with at least a keyboard, a mouse, and a monitor is thus suggested.

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Chapter 1
General Information

1.1 Main Feature

Mini-ITX System Board

BNX-I81 is a standard Mini-ITX motherboard featuring Intel® H81 PCH chipset supports Intel® Gen-4 Core™ processor and two Dual Channel DDR3 SO-DIMM slots up to 16GB DDR3 1066/1333/1600MHz SDRAM with Non-ECC support and integrated HD graphic controller.

- Intel® Gen-4 LGA1150 Haswell Processor
- Two DDR3 SO-DIMM Slots up to 16GB
- Three SATA Ports: 2* SATA 3.0 + 1* SATA 2.0 + 1* mSATA
- Three Display Ports: DisplayPort, HDMI, and one optional VGA
- Default One Serial Port: RS-232
- Optional Four Serial Ports: One supporting RS-232/422/485
- Default One LPT Port
- Seven USB 2.0 ports: Two Edge Ports + Five Internal Ports
- Two USB 3.0 Ports: All Edge Ports
- One Realtek GbE LAN Port
- 1* PCIe X4 Slot
- 1* half-sized miniPCIe Slot

1.2 Specifications

Core Engine	Chipset	Intel® H81 PCH
	Processor	Support Intel® Gen-4 Core i3, i5, i7, Pentium®, Celeron® Processor Single LGA1150 Processor Socket
	Memory	2x DDR3 1066/1333 DIMM Slots, up to 16GB, Non-ECC/Non-Buffered Memory Module
	Display	Intel® HD Graphics 4600, support 18/24 bit Single Channel LVDS
Ethernet	Controller	Onboard 1x Realtek RTL8111E PCIe GbE Controller
Storage	SATA	2x SATA3 + 1x SATA2 Ports
	mSATA	1x
Expansion	PCIe X4	1x
	miniPCIe	1x Half-sized
	miniPCIe	1x Full-sized, shared with mSATA, support 1x VGA + 4x COM
Edge I/O	Power	1x 19V DC Jack
	Display	1x HDMI + 1x Display Port
	USB	2x USB 3.0 + 2x USB 2.0
	LAN	1x RJ45 GbE
	Audio	2x Audio Jacks
Internal I/O	Front Panel	1x Front Panel Switch/LED Header
	COM	1x Onboard Pin Header 3x RS-232 + 1x RS-232/422/485 Pin Header via Module
	LPT	1x 20-pin Pin Header
	VGA	1x VGA Pin Header via Module
	SATA Power	1x Standard SATA Power Connector
	USB	5x USB 2.0 Pin Headers
	Audio	1x Front Audio Pin Header
	Panel	1x LVDS + 1x Backlight Connector
	Fan	2x Fan Connectors
Other	H/W Monitoring	Monitor temperature, voltage, and fan speed, auto-throttling control at CPU overheat
	WDT	1 min increment from 1 to 255 min, 1 sec increment from 1 to 255 sec
Environment	Operating Temp.	0ºC ~ 60ºC
	Storage Temp.	-20ºC ~ 70ºC
	Humidity	10% ~ 90% (Non-Condensing)
Mechanical	Dimension	170mm (W) x 170mm (D)

1.3 Board Layout

Figure 1.1: Board Layout of BNX-I81

Chapter 2
Preparation

2.1 Before You Begin

A stable and clean working environment are essential. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A set of jewelers Screwdrivers
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Never touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

2.3 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN. Please see the following illustrations

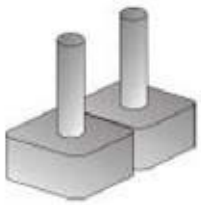
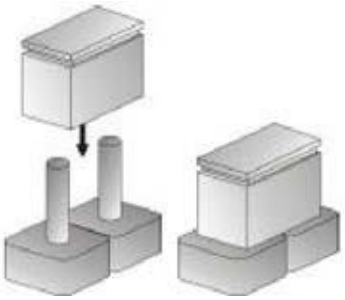
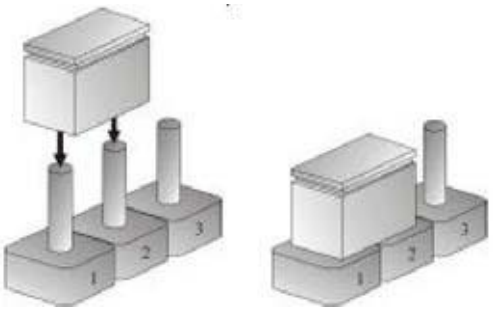
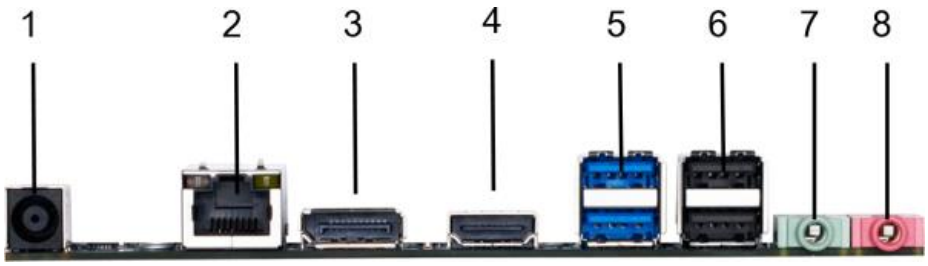
<table>
<tr><td rowspan="2">The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.</td><td>  </td><td>  </td></tr>
<tr><td>Open (Off)</td><td>Short (On)</td></tr>
<tr><td>These illustrations show a 3-pin jumper. Pins 1 and 2 are SHORT.</td><td colspan="2">  </td></tr>
</table>

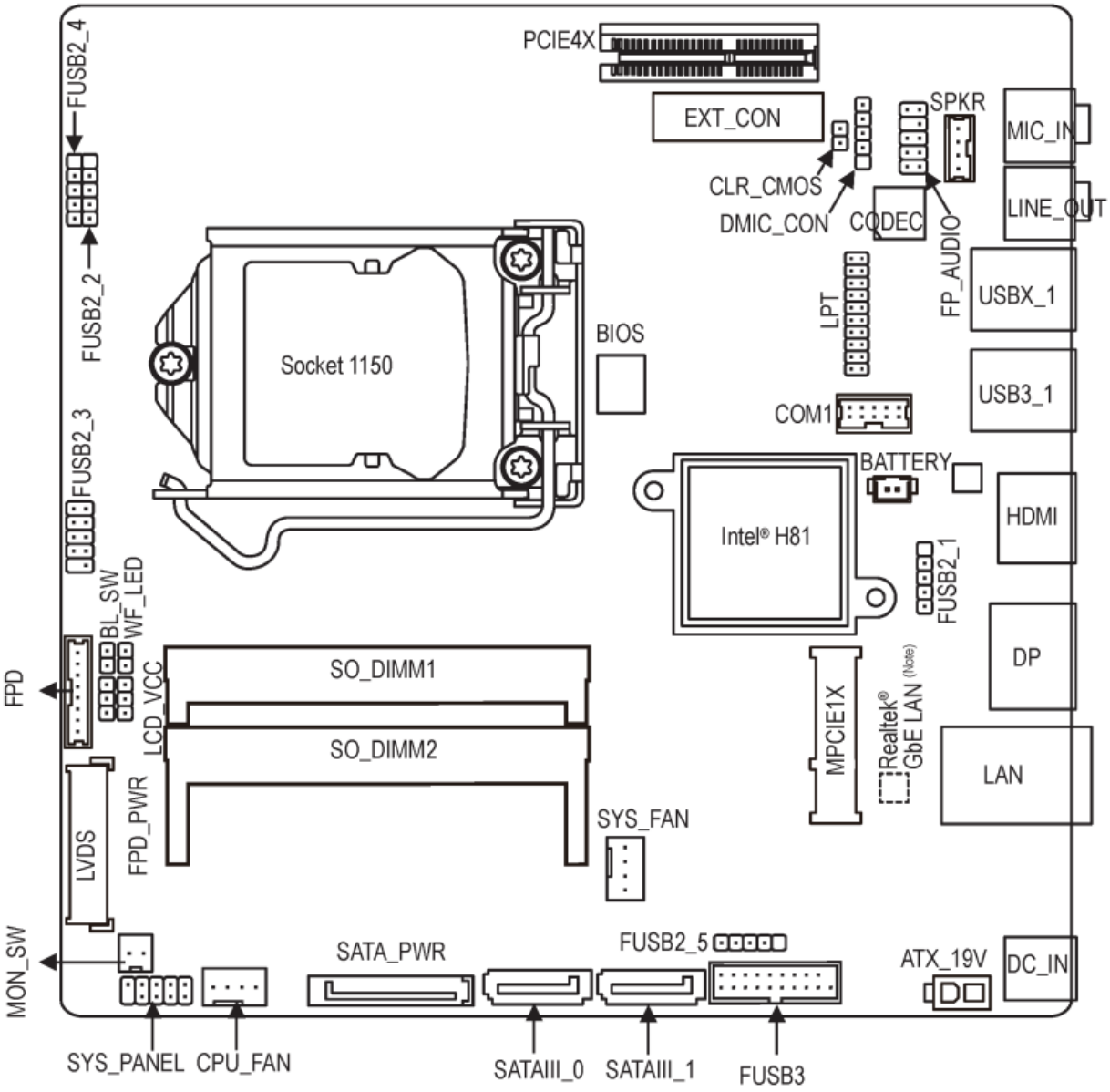
Table 2-1: Setting Jumpers

2.4 Back Panel Connectors



1. 19V DC-In Jack
2. LAN
3. DisplayPort
4. HDMI
5. 2* USB 3.0
6. 2* USB 2.0
7. Line-Out Jack
8. Microphone Jack

2.5 Locations Of Jumpers and Connectors



List of Onboard Connectors

PCIE 4X	Onboard PCIe X4 Slot
CLR_CMOS	Clear CMOS Jumper
DMIC_CON	Digital Microphone Connector
FP_Audio	Front Audio Header
SPKR	Buzzer Header
MIC_IN	Microphone In Jack
LINE_OUT	Lineout Jack
LPT	Parallel Connector
USBX_1	2-Port Type-A USB 2.0
COM1	Serial Port COM1
USB3_1	2-Port Type-A USB 3.0
Battery	Battery Cable Connector
HDMI	Edge HDMI Port
DP	Edge DisplayPort
MPCIE1X	miniPCIe Slot
LAN	Edge RJ45 Gigabit Port
ATX_19V	2-pin 19Vdc Power Input Header
DC_IN	19Vdc Power Input Jack
FUSB2_5	1-Port USB 2.0 Header
FUSB3	2-Port USB 3.0 Header
SATAIII_0	SATA0 Port
SATAIII_1	SATA1 Port
SATA_PWR	SATA Power Connector
CPU_FAN	CPU Fan Connector
SYS_FAN	System Fan Connector
SYS_PANEL	Front Panel Connector
MON_SW	Flat Panel Switch Header
LVDS	LVDS Connector
FPD	Display Brightness Connector
FPD_PWR	Flat Panel Power Connector
LCD_VCC	LVDS Voltage Jumper
BL_SW	Backlight Switch Header
WF_LED	WiFi LED Indication
FUSB2_2	1-Port USB 2.0 Header
FUSB2_3	2-Port USB 2.0 Header
FUSB2_4	1-Port USB 2.0 Header

2.6 Jumpers

▶ Clear CMOS Jumper

Pin	Definition
Open	Normal Operation (Default)
Close	Clear CMOS

▶ LVDS Voltage Selection Jumper

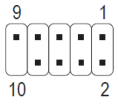
Pin	Definition
1-2	3.3V
2-3	5V (Default)

▶ Backlight Power Selection Jumper

Pin	Definition
1-2	12V
2-3	19V (Default)

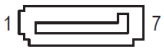
2.7 Internal Connectors

Front Panel Header



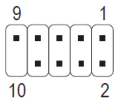
Pin	Definition	Pin	Definition
1	HD LED+	2	Power LED+
3	HD LED-	4	Power LED-
5	GND	6	Power Switch+
7	Reset	8	Power Switch-
9	WiFi Active LED		

SATA0 ~ SATA1 Connector



Pin	Definition	Pin	Definition
1	GND	5	RXN
2	TXP	6	RXP
3	TXN	7	GND
4	GND		

USB 2.0 Connector

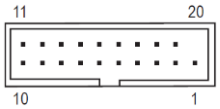


Pin	Definition	Pin	Definition
1	VCC	2	VCC
3	USB-	4	USB-
5	USB+	6	USB+
7	GND	8	GND
9	No Pin		

USB 2.0 Connector

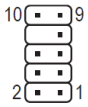
Pin	Definition
1	VCC
2	USB-
3	USB+
4	GND
5	No Pin

USB 3.0 Connector



Pin	Definition	Pin	Definition
1	VBUS	11	D2+
2	SSRX1-	12	D2-
3	SSRX1+	13	GND
4	GND	14	SSTX2+
5	SSTX1-	15	SSTX2-
6	SSTX1+	16	GND
7	GND	17	SSRX2+
8	D1-	18	SSRX2-
9	D1+	19	VBUS
10	NC	20	No pin

Front Panel Connector

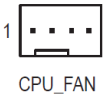


Pin	Definition	Pin	Definition
1	F_MIC_L	2	GND
3	F_MIC_R	4	GPIO_DET
5	F_LINE_R	6	F_MIC_JD
7	GND	8	No Pin
9	F_LINE_L	10	F_LINE_JD

Display Brightness Connector

Pin	Definition	Pin	Definition
1	BKLT_EN	5	GND
2	BKLT_PWM	6	GND
3	BKLT_PWR	7	DIM_UP
4	BKLT_PWR	8	DIM_DOWN

CPU/System Fan Connector



Pin	Definition
1	GND
2	+12V
3	Sense
4	Speed Control

Digital Microphone Header

Pin	Definition
1	Power
2	DMI Data
3	GND
4	DMI CLK
5	No Pin

LVDS Connector

Pin	Definition	Pin	Definition
1	ODD_Lane3_P	21	NC
2	ODD_Lane3_N	22	EDID_3.3V
3	ODD_Lane2_P	23	LCD_GND
4	ODD_Lane2_N	24	LCD_GND
5	ODD_Lane1_P	25	LCD_GND
6	ODD_Lane1_N	26	ODD_CLK_P
7	ODD_Lane0_P	27	ODD_CLK_N
8	ODD_Lane0_N	28	BLKT_GND
9	EVEN_Lane3_P	29	BLKT_GND
10	EVEN_Lane3_N	30	BLKT_GND
11	EVEN_Lane2_P	31	EDID_CLK
12	EVEN_Lane2_N	32	BLKT_ENABLE
13	EVEN_Lane1_P	33	BLKT_PWM_DIM
14	EVEN_Lane1_N	34	EVEN_CLK_P
15	EVEN_Lane0_P	35	EVEN_CLK_N
16	EVEN_Lane0_N	36	BLKT_PWR
17	EDID_GND	37	BLKT_PWR
18	LCD_VCC	38	BLKT_PWR
19	LCD_VCC	39	NC
20	LCD_VCC	40	EDID_DATA

WiFi Activity Indicator LED Header

Pin	Definition	Pin	Definition
1	GND	2	LED_WLAN

19Vdc Power Connector

Pin	Definition
1	GND
2	+19Vdc

Flat Panel Switch Header

Pin	Definition
1	MON_SW
2	GND

Speaker Header

Pin	Definition
1	Speaker_Out L-
2	Speaker_Out L+
3	Speaker_Out R+
4	Speaker_Out R-

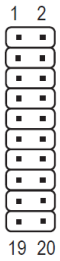
Battery Cable Connector

Pin	Definition
1	RTC_Reset
2	GND

Backlight Switch Header

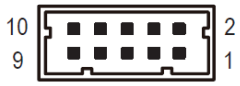
Pin	Definition
1	BL_DOWN
2	BL_UP

LPT Connector



Pin	Definition	Pin	Definition
1	STB-	2	BUSY
3	PD0	4	PE
5	PD1	6	SLCT
7	PD2	8	AFD-
9	PD3	10	ERR-
11	PD4	12	INIT-
13	PD5	14	SLIN-
15	PD6	16	GND
17	PD7	18	GND
19	ACK-	20	GND

COM1 Connector



Pin	Definition	Pin	Definition
1	NDCD-	2	NDSR-
3	NSIN	4	NRTS-
5	NSOUT	6	NCTS-
7	NDTR-	8	NRI-
9	GND	10	No Pin

Chapter 3
Operation

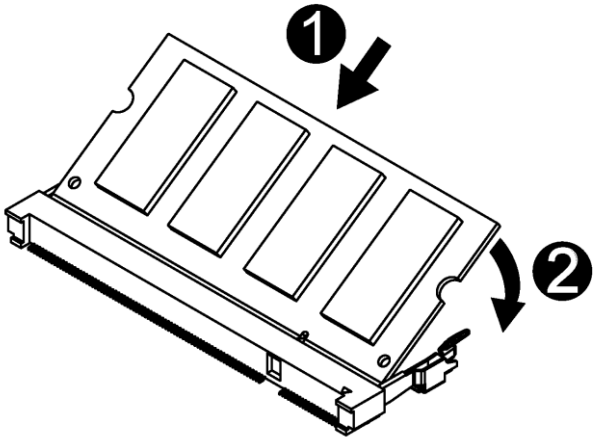
3.1 System Memory

BNX-I81 has Intel® H81 chipset built-in, and supports dual channel non-ECC, un-buffered DDR3-1066/1333/1600MHz memory modules. Two SO-DIMM slots support up to 16GB Memory Capacity.

3.2 Installing Memory

To install Memory

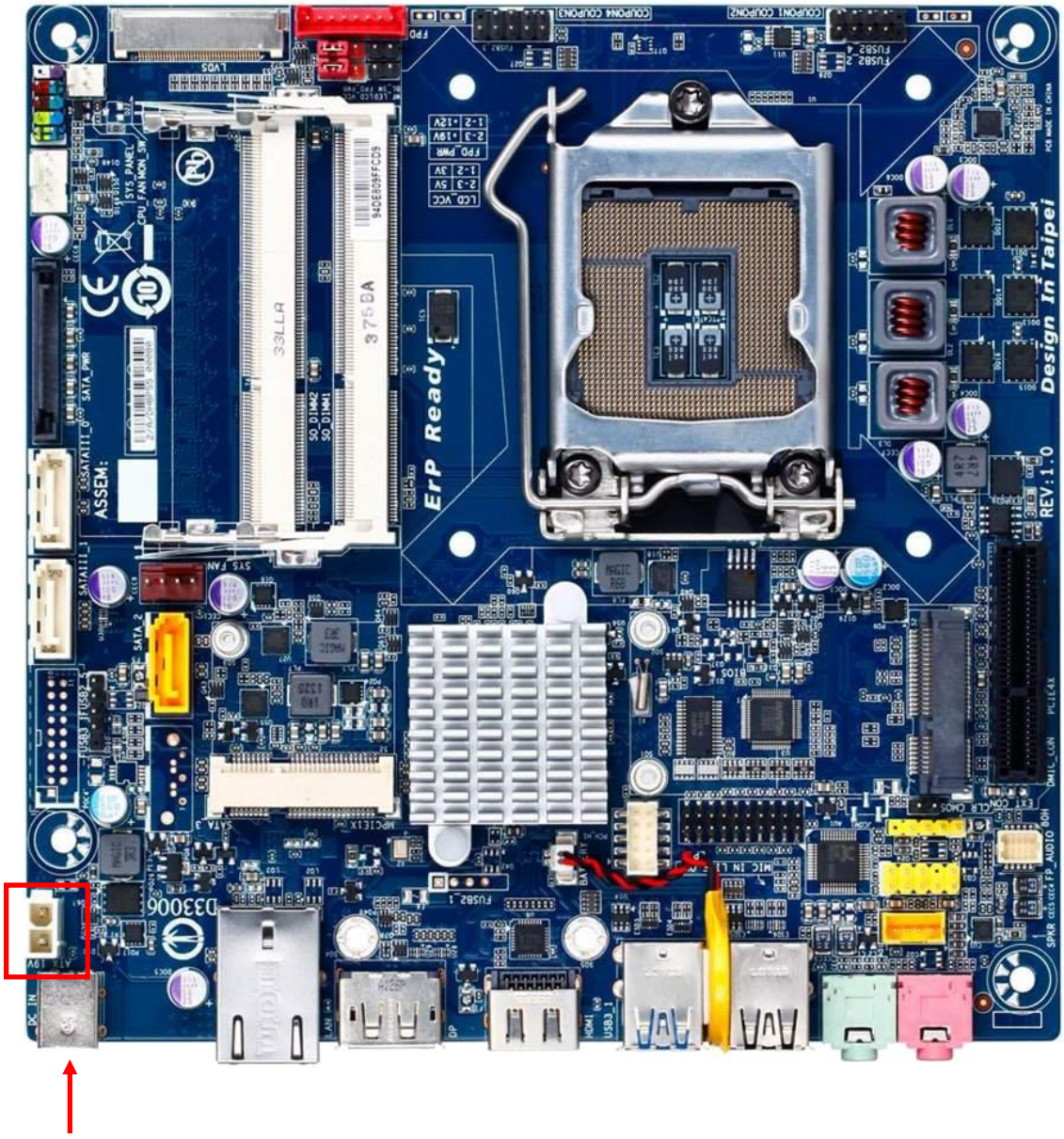
1. Make sure the “Key” on Memory module and slot are perfectly matched, and add slowly the RAM module into the slot.
2. Push the RAM module right up until the module is snapped in the slot by both side clips.



3. To remove the Memory modules, please push the clips outwards, and the memory modules will be automatically disengaged.

3.3 Adding 19Vdc Power

BNX-I81 motherboard requires only 19Vdc power, on either the edge Jack (red arrow) or internal 2-pin Power Input connector (red box).



3.4 Adding PCIe Card

BNX-I81 motherboard comes with 1* PCIe X4 slot. Prior to add your expansion card onto these slots, please:

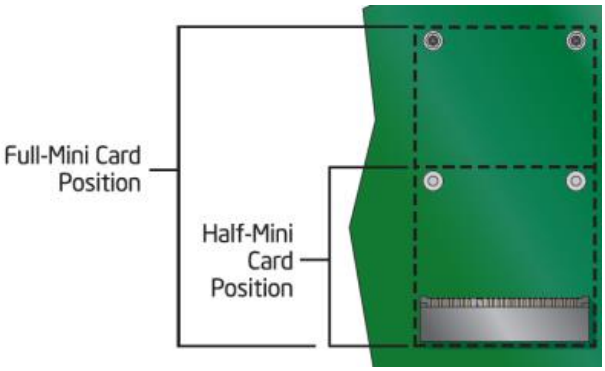
(1) Identify the type of expansion card to be added. In the picture below:

Color	Definition	Signal	Deployment
Blue	1* PCIe X4 Slot	PCIe 2.0 X4 Signal	Good for PCIe X1 and PCIe X4 Card

(2) Shutdown the system (would be nice to cut the power) if system is running.
(3) Plug in the cards and put the power back on.
(4) Please refer to the application notes of user's manual of the expansion card to load driver files or initiate the expansion card.

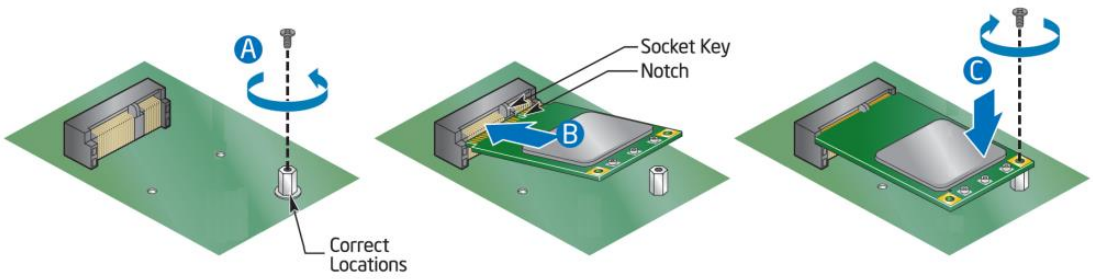
3.5 Install a PCI Express Mini Card in the Full-Mini Card Slot

BNX-I81 comes with one full-sized Mini Card slot, supporting mSATA module or one proprietary module (for additional one VGA and four COM ports). Please find the correct slot on page 14 before adding the cards onto the slots.



PCI Express Full-Mini Card Installation:

(A) If a screw is found in the stand-off, please remove the screw.
(B) Align the notch in the card with the socket key and insert the card at a slightly upward angle as shown.
(C) Push down on the card and secure with one screw.



Note: BNX-I81 comes also with one half-sized Mini Card slot, supporting all general half-sized miniPCIe module. Please follow the same procedure for proper installation.

Chapter 4
BIOS Setup

About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values stored in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

When to Run BIOS

This program should be executed under the following conditions:

- When changing the system configurations.
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program.
- When resetting the system clock.
- When setting the CPU clock speed so that it automatically runs either fast or slow.
- When redefining the communication ports to prevent any conflicts.
- When making changes to the Power Management configuration.
- When changing the password or making other changes to the security setup.

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM loses power, or when the system features need to be changed.

When to Update BIOS

In the event that new features are released and a BIOS update is required, you will need to update your BIOS on your own, with the help of an appropriate guide, a reference tool, and some command files for the job.

Please seek for help from your local dealer, or send your request to our technical support department.

4.1 Entering Setup

When the system is powered on, the BIOS will initiate the Power-On-Self-Test (POST) routines. These routines perform various diagnostic checks. If an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <**Del**> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC> OR <DEL> KEY

Press the <**Del**> key or press the <**Ctrl**>, <**Alt**>, and <**Esc**> keys to enter Setup.

4.2 Getting Help

The online description of the highlighted setup item is displayed at the right pane of the menu at all time. Press F1 to pop up a small help window that lists all the function keys and its use.

To exit the Help Window, press **<F1>** or **<Esc>.**

4.3 Control Keys

The table below lists all the function keys for the navigation in the BIOS setup menu.

Function Key	**Description**
Up/Down Arrow Key	Move Up/Down
Left/Right Arrow Key	Move Left/Right
Enter Key	Select
+/- Key	Change value
ESC	Exit
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit BIOS Setup Menu

To exit the Help Window, press **<F1>** or **<Esc>.**

4.4 The Main Menu

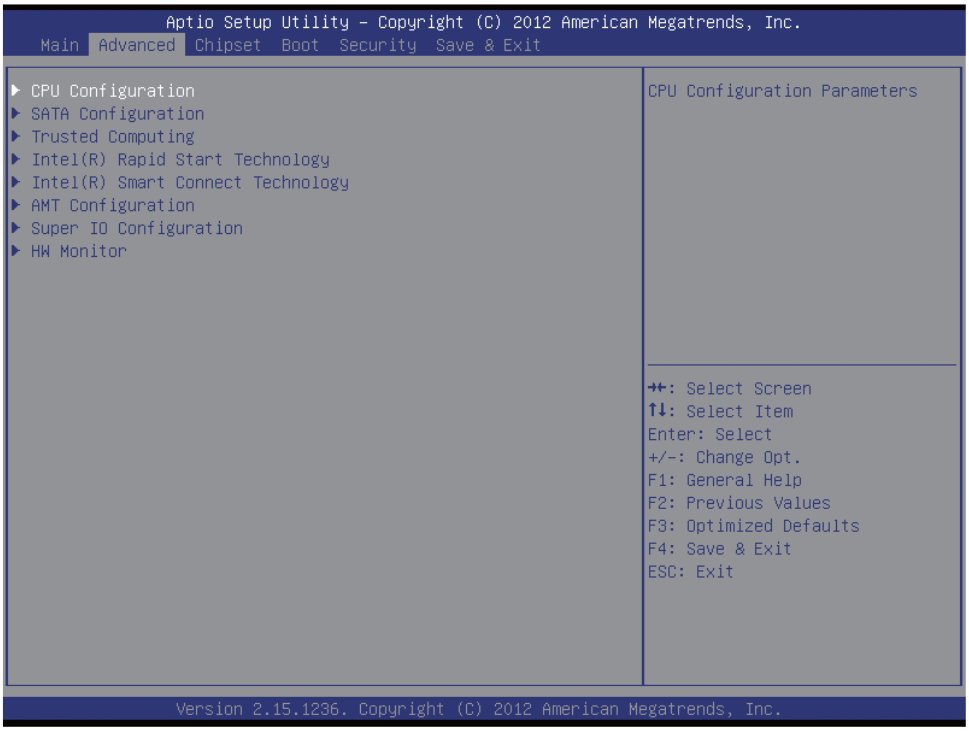
The menu bar on the top of the first screen has the following submenus:

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
Product Name I81
BIOS Version F4
Build Date and Time 10/14/2013 17:29:14
LAN1 MAC Address 88-88-88-88-87-88
Memory Information
Size 2048 MB (DDR3)
Frequency 1333 Mhz
ME FW Version 9.0.13.1402
System Date [Thu 10/17/2013]
System Time [16:50:01]
Set the Date. Use Tab to switch between Date elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Main:** Basic system configuration.
- **Advanced:** Advanced system settings.
- **Chipset:** Chipset settings
- **Boot:** System boot configuration.
- **Security:** BIOS security settings.
- **Save & Exit:** Exit options as well as loading optimal defaults

System Date [Day xx/xx/xxxx]: Set the system date.
System Time [xx:xx:xx]: Set the system time.

4.5 The Advanced Menu



CPU Configuration

Intel Virtualization Technology (Note)

Select whether to enable the Intel Virtualization Technology function. VT allows a single platform to run multiple operating systems in independent partitions.

Options available: Enabled/Disabled. Default setting is **Enabled**.

EIST (Enhanced Intel SpeedStep Technology)

Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Turbo Mode

When this feature is enabled, the processor can dynamically overclock one or two of its four processing cores to improve performance with applications that are not multi-threaded or optimized for quad-core processors.

Options available: Enabled/Disabled. Default setting is **Enabled**.

CPU C3/C6 Report (Note)

Allows you to determine whether to let the CPU enter C3/C6 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C3/C6 state is a more enhanced power-saving state than C1.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Default setting for C3/C6 is **Enabled**.

CPU C7 report (Note)

Allows you to determine whether to let the CPU enter C7 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C7 state is a more enhanced power-saving state than C3. Default setting is **CPU C7s**.

SATA Configuration

SATA Mode Selection

Enables or disables RAID for the SATA controllers integrated in the Intel Chipset or configures the SATA controllers to AHCI mode.

- IDE Configures the SATA controller to IDE mode.
- AHCI Configures the SATA controllers to AHCI mode. Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced Serial ATA features such as Native Command Queuing and hot plug. (Default)

Serial ATA Port 0/Serial ATA Port 1/Serial ATA Port 2/mSATA(Note)

The category identifies Serial ATA and mSATA types of hard disk that are installed in the computer.

System will automatically detect HDD type.

Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category.

Hard drive information should be labeled on the outside device casing. Enter the appropriate option based on this information.

Hot Plug

Enables or disable the hot plug capability for each SATA port. (Default: Disabled)

Trusted Computing

Security Device Support

Option available: Enabled/Disabled. Default setting is **Disabled**.

Intel® Rapid Start Technology

Intel(R) Rapid Start Technology (Note)

Enable/Disable the Intel Rapid Start Technology (IRSTe) funciton. The IRSTe enables your system to get up and running faster from even the deepest sleep, saving time and power consumption.

Option available: Enabled/Disabled. Default setting is **Disabled**.

Intel® Smart Connect Technology

ISCT Configuration

Enables or disables Intel Smart Connect Technology. (Default: Disabled)

Super IO Configuration

Serial Port 0 Configuration

Enables or disables the onboard serial port. (Default: Enabled)

Parallel Port Configuration

Enables or disables the onboard parallel port. (Default: Enabled)

H/W Monitor

CPU/System FAN Fail Detect

Enable CPU/System Fan Stop Warning function.

Option available: Enabled/Disabled. Default setting is **Enabled**.

CPU/System SMART FAN Control

Enable CPU/System Smart Fan function.

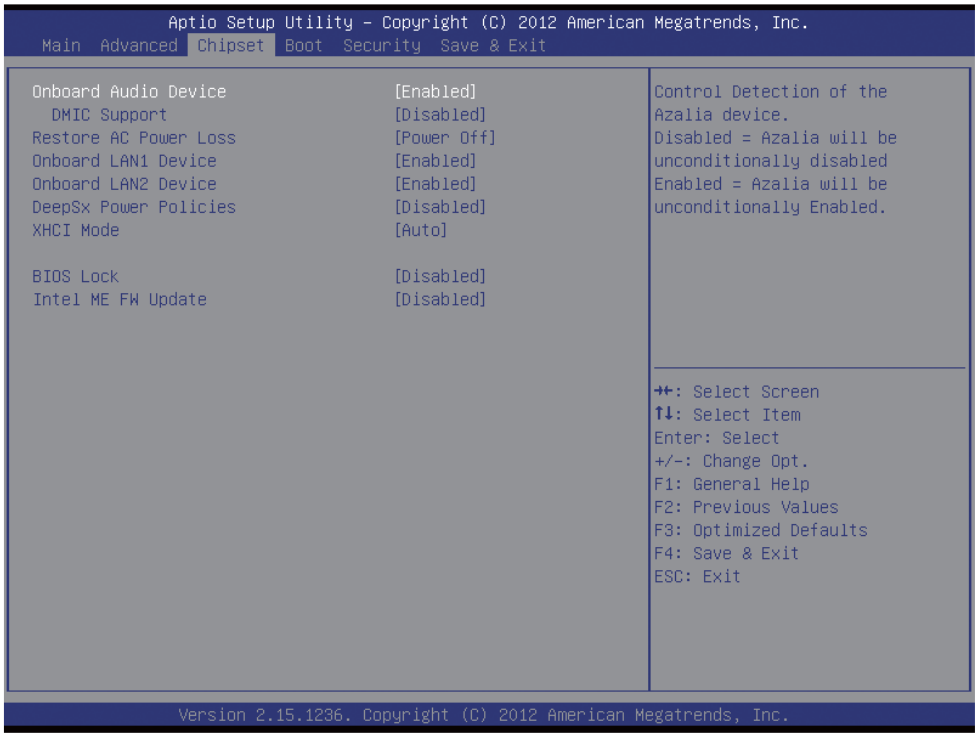
Option available: Enabled/Disabled. Default setting is **Enabled**.

SYS FAN Type

Select system fan type.

Option available: 3 Pin/4 Pin. Default setting is **3 Pin**.

4.6 The Chipset Menu


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Onboard Audio Device [Enabled]
DMIC Support [Disabled]
Restore AC Power Loss [Power Off]
Onboard LAN1 Device [Enabled]
Onboard LAN2 Device [Enabled]
DeepSx Power Policies [Disabled]
XHCI Mode [Auto]
BIOS Lock [Disabled]
Intel ME FW Update [Disabled]
Control Detection of the Azalia device.
Disabled = Azalia will be unconditionally disabled
Enabled = Azalia will be unconditionally Enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Onboard Audio Device

Enable/Disable onboard audio controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

DMIC Support

Define the Verb Table. Mode A does not support DMIC. Mode B supports DMIC.

Options available: Disabled/Enabled. Default setting is **Disabled**.

Restore AC Power Loss

This option provides user to set the mode of operation if an AC / power loss occurs.

Power On: System power state when AC cord is re-plugged.

Power Off: Do not power on system when AC power is back.

Last State: Set system to the last sate when AC power is removed.

Options available: Power On/Power Off/Last State. Default setting is **Power Off**.

Onboard LAN1/LAN2 Device

Enable/Disable onboard LAN1/LAN2 controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

DeepSx Power Policies

Determines whether to let the system consume least power in S5 (shutdown) state. (Default: Disabled)

XHCI Mode

Allows you to determine the operating mode for the xHCI controller in OS.

Smart Auto: This mode is available only when the BIOS supports the xHCI controller in the pre-boot environment. This mode is similar to Auto, but it adds the capability to route the ports to xHCI or EHCI according to setting used in previous boots (for non-G3 boot) in the pre-boot environment. This allows the use of USB 3.0 devices prior to OS boot. xHCI controller enabling and rerouting should follow the steps in Auto, when previous boot routs ports to EHCI. Note: This is the recommended mode when BIOS has xHCI preboot support.

Auto: BIOS routes the sharable ports to EHCI controller. Then it uses ACPI protocols to provide an option to enable the xHCI controller and reroute the sharable ports. Note: This is the recommended mode when BIOS does NOT have xHCI pre-boot support. (Default)

BIOS Lock

Enabled and disable BIOS lock.

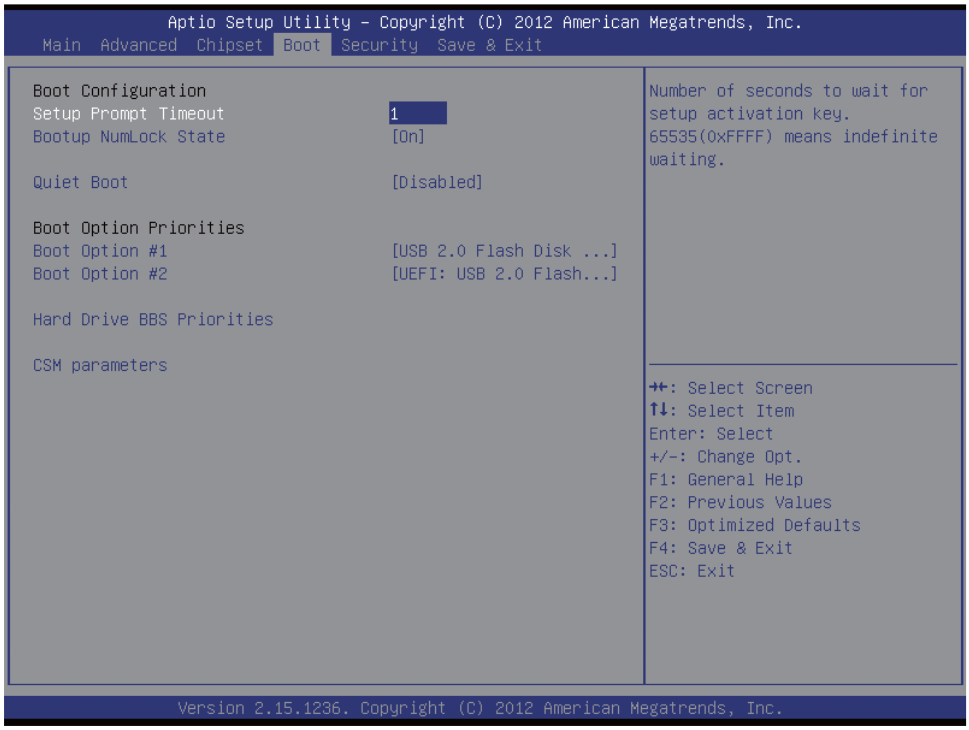
Note: For AMT Feature, must enable it. (Default: Disabled)

Intel ME FW Update

Enable and disable update capability of ME FW. (Default: Disabled)

Note: After setting changed, must power off system once to active ME FW update capability.

4.7 The Boot Menu



Setup Prompt Timeout

Number of seconds to wait for setup activation key.

Bootup NumLock State

Allows you to select power-on state for NumLock function.

Options available: On/Off. Default setting is **On**.

Quiet Boot

If enabled, the system will speed the boot up time.

Options available: Enabled/Disabled. Default setting is **Disabled**.

Boot Option Priorities

Specifies the overall boot order from the available devices. For example, you can set hard drive as the first priority (Boot Option #1) and DVD ROM drive as the second priority (Boot Option #2). The list only displays the device with the highest priority for a specific type. For example, only hard drive defined as the first priority on the **Hard Drive BBS Priorities** submenu will be presented here.

Removable storage devices that support GPT format will be prefixed with "UEFI:" string on the boot device list. To boot from an operating system that supports GPT partitioning, select the device prefixed with "UEFI:" string. Or if you want to install an operating system that supports GPT partitioning such as Windows 7 64-bit, select the optical drive that contains the Windows 7 64-bit installation disk and is prefixed with "UEFI:" string.

CSM Parameter

Launch CSM

Enables or disables UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

Enabled Enables UEFI CSM. (Default)

Disabled Disables UEFI CSM and supports UEFI BIOS boot process only.

Boot option filter

Allows you to select which type of operating system to boot.

- UEFI and Legacy: Allows booting from operating systems that support legacy option ROM or UEFI option ROM. (Default)
- Legacy only: Allows booting from operating systems that only support legacy Option ROM.
- UEFI only: Allows booting from operating systems that only support UEFI Option ROM.

This item is configurable only when **Launch CSM** is set to **Enabled**.

Launch PXE OpROM policy

Allows you to select whether to enable the UEFI or legacy option ROM for the LAN controller.

- Do not launch: Disables option ROM. (Default)
- Legacy only: Enables legacy Option ROM only.

This item is configurable only when **Launch CSM** is set to **Enabled**.

Launch Storage OpROM policy

Allows you to select whether to enable the UEFI or legacy option ROM for the storage device controller.

- Do not launch: Disables option ROM.
- Legacy Only: Enables legacy option ROM only. (Default)
- UEFI Only: Enables UEFI option ROM only.

This item is configurable only when **Launch CSM** is set to **Enabled**.

Other PCI device ROM priority

Allows you to select whether to enable the UEFI or Legacy option ROM for the PCI device controller other than the LAN, storage device, and graphics controllers.

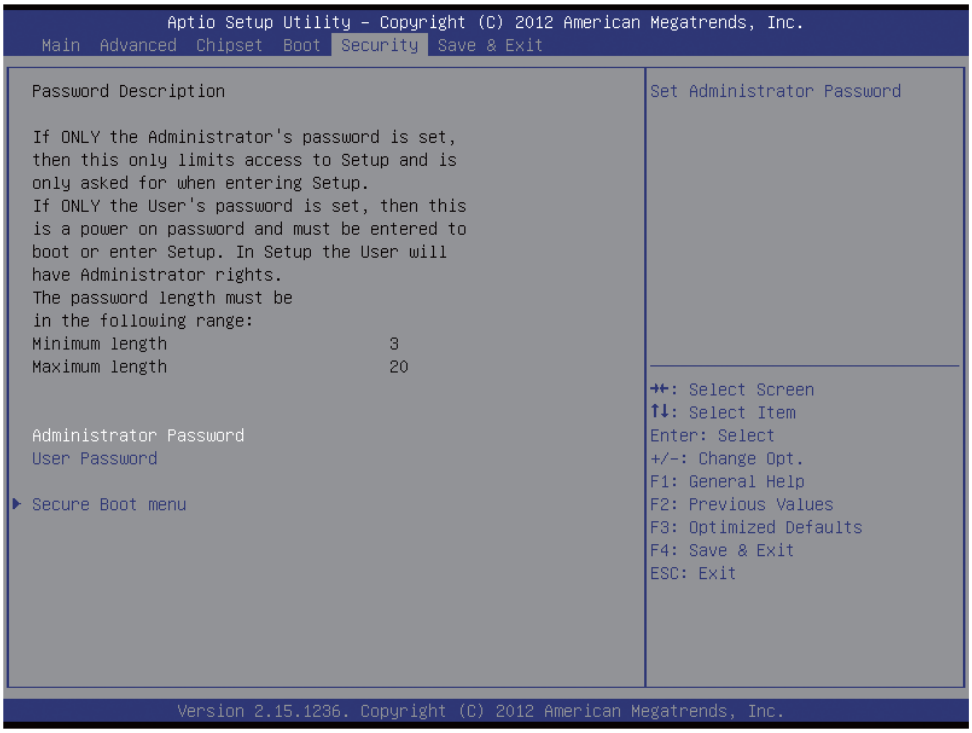
- UEFI OpROM: Enables UEFI option ROM only. (Default)
- Legacy OpROM: Enables legacy option ROM only.

This item is configurable only when **Launch CSM** is set to **Enabled**.

Network stack

Disables or enables booting from the network to install a GPT format OS, such as installing the OS from the Windows Deployment Services server. (Default: Disabled)

4.8 The Security Menu


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Secure Boot menu
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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There are two types of passwords that you can set:

- Administrator Password: Entering this password will allow the user to access and change all settings in the Setup Utility.
- User Password: Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, an Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

Administrator Password

Press <Enter> to configure the Administrator password.

User Password

Press Enter to configure the user password.

Secure Boot Control

Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all the files being loaded before Windows 8 loads and gets to the login screen have not been tampered with.

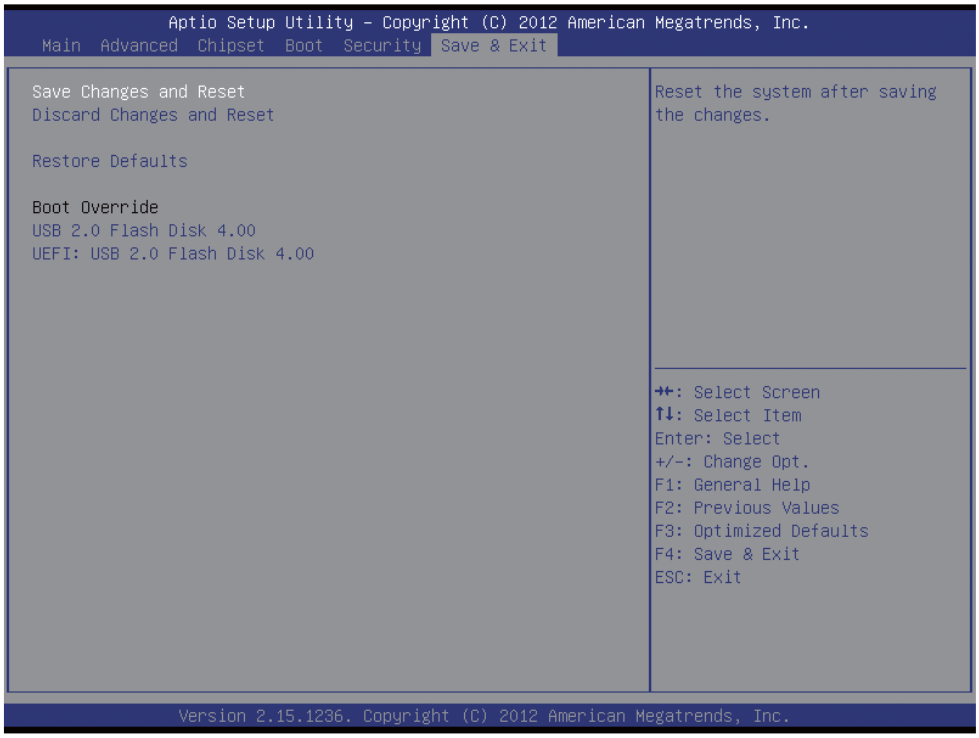
Options available: Enabled/Disabled. Default setting is **Enabled**.

Secure Boot Mode

Define the Secure Boot Mode.

Option available: Standard/Custom. Default setting is **Standard**.

4.9 The Save and Exit Menu


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Save Changes and Reset
Discard Changes and Reset
Restore Defaults
Boot Override
USB 2.0 Flash Disk 4.00
UEFI: USB 2.0 Flash Disk 4.00
Reset the system after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Save Changes and Reset

Active this option to reset system after saving the changes.

Options available: Yes/No.

Discard Changes and Reset

Active this option to reset system after without saving any changes.

Options available: Yes/No.

Restore Defaults

Press <Enter> on this item and then press the <Y> key to load the default BIOS settings.

Options available: Yes/No.

Boot Override

Press Enter to configure the device as the boot-up drive.

UEFI: Built-in in EFI Shell

Press <Enter> on this item to Launch EFI Shell from file system device.